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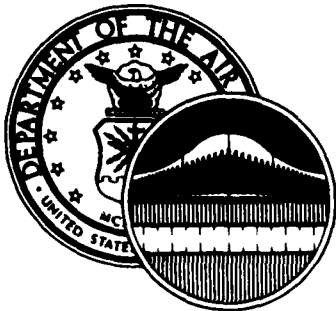
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TRAINING REPORT. TACTICAL AIRCRAFT MAINTENANCE SPECIALTY, AFSC --ETC(U)
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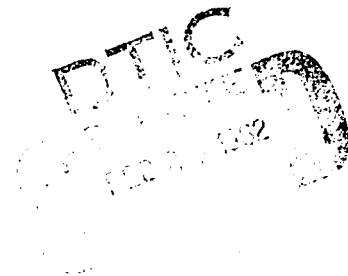
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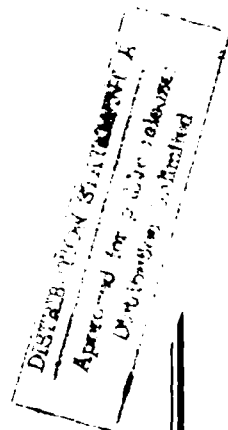
OCCUPATIONAL SURVEY REPORT



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TRAINING REPORT
TACTICAL AIRCRAFT MAINTENANCE SPECIALTY
AFSC 431X1
AFPT 90-431-371
JANUARY 1982

OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150



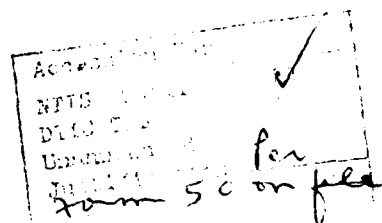
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A

PREFACE

This report presents the results of a detailed Air Force Occupational Survey involving the training requirements for first-term airmen in the Tactical Aircraft Maintenance (AFS 431X1) specialty. The project was undertaken at the request of HQ Air Training Command and Sheppard Technical Training Center (STTC), and was directed by USAF Program Technical Training, Volume 2, dated October 1978. Authority for conducting occupational surveys is contained in AFR 35-2. Computer printouts from which this report was produced are available for use by operational and training officials.

CMSgt Robert M. Wing, Inventory Development Specialist, developed the survey instrument for this project. Captain James H. Gilbert analyzed the data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Center.

Copies of this report are distributed to the organizations shown on page i. Additional copies may be obtained by contacting the USAF Occupational Measurement Center, attention to the Chief, Occupational Analysis Branch (OMY), Randolph AFB TX 78150.

This report has been reviewed and is approved.

PAUL T. RINGENBACH, Col, USAF
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Center

SUMMARY OF RESULTS

SURVEY OBJECTIVE: The purpose of this report is to provide occupational survey data to use in assessing current aircraft maintenance training documents and programs involving first-enlistment 431X1 personnel.

SURVEY COVERAGE: Training emphasis ratings were collected from senior 431X1 technicians by aircraft system to help identify both common and aircraft-specific training requirements.

TRAINING ANALYSIS: Survey data highlighted some common first-term 431X1 maintenance functions appropriate for Phase I Able Chief training. A comparison of data for different airlift and bombardment groups also provided information on what tasks instructors should teach in the Phase II courses. In addition, this analysis indicated that FTD or OJT programs may be relevant when training tasks are unique to specific maintenance jobs.

STS 431X2: Although the 431X1 specialty training standard provides good coverage of most functions, training managers should consider placing specific emphasis on the maintenance of non-powered AGE equipment. A thorough review of both common and aircraft-specific data is also needed to ensure the most appropriate training methods are used when preparing individuals for their jobs.

POI 3AQR431X1/X2: Phase I course managers should review AFS 431X1 data matched to the 431X1/X2 Plan of Instruction to see that training is applicable to both AFS 431X1 and 431X2 incumbents. Survey data indicate some tasks currently taught in the Phase I course may be trained more effectively through FTD or OJT programs, while several 431X1 tasks would be more relevant to resident training if the course were channelized.

DISCUSSION: The survey data in this report and the attached 431X1 Training Extract provide information for general aircraft, specific aircraft, and special maintenance job functions, and have broad applications for Phase I, Phase II, follow-on FTD, and OJT training programs. Headquarters Air Training Command Staff and Able Chief training personnel have already used survey data to develop a new tentative 431X1 STS. Because of the complex training structure of the 431X1 specialty, survey data should be useful in assessing and coordinating training requirements to develop a fully integrated 431X1 training program.

431X1 TRAINING REPORT
TACTICAL AIRCRAFT MAINTENANCE SPECIALTY
(AFSC 431X1)

INTRODUCTION

This is a report of a training analysis of the Tactical Aircraft Maintenance specialty (AFS 431X1), completed by the Occupational Analysis Branch, USAF Occupational Measurement Center, in January 1982. Training management personnel from the Sheppard Training Division of the Career Field Training Directorate (ATC/TTQJ) and Aerospace Systems Division of the Systems Training Directorate (ATC/TTYA) at Headquarters Air Training Command and from Sheppard Technical Training Center (STTC) requested this analysis to provide occupational data to help assess current aircraft maintenance training documents and programs involving first-enlistment 431X1 personnel.

Background

Members of the 431X1 specialty receive their 3-skill level upon completion of Phase I and II Able Chief training. During the initial phase, AFS 431X1 and 431X2 personnel attend a common four week course at STTC which provides orientation training on aircraft maintenance fundamentals, aircraft systems, maintenance documentation, aircraft and flightline safety, technical orders, aerospace ground equipment, corrosion control, and aircraft ground handling. Following their basic orientation training at Sheppard, personnel receive Phase II aircraft-specific training at designated field training detachments (FTD).

Objectives

Since training for first-term 431X1 airmen involves aircraft-specific as well as general technical training, this report provides task data which training managers can use in conjunction with career ladder documents to assess the effectiveness of both phases of maintenance training. Topics discussed in this report include: (1) survey development and administration; (2) representative tasks performed by first-enlistment 431X1 personnel; (3) comparison of aircraft related differences; and (4) assessment of the 431X1 STS, and the 431X1/X2 POI.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory, AFPT 90-431-371, which contains task statements for both AFS 431X1 and 431X2. A tentative task list was developed after reviewing previous aircraft maintenance inventories and researching applicable career field publications and directives. The task list was then validated in the

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field through personal interviews with 50 subject matter specialists (senior 7-skill level technicians) from five bases. This process resulted in a final inventory of 1,045 tasks and a background section that included information about the respondents, such as grade, TAFMS, duty title, aircraft system, and job interest.

Job Inventory Administration

During the period April through October 1980, consolidated personnel offices in operational units worldwide administered the job inventory to a stratified random sample of job incumbents holding a DAFSC of 431X1 or 431X2. The respondents were selected from a computer generated mailing list obtained from AFMPC historical personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL).

Inventory respondents first completed an identification section and then checked each task performed in their current job. Respondents also rated each task they performed on a nine-point scale indicating the relative time spent on the task as compared to all other tasks checked. This information was used to compare personnel based on the types of tasks they performed and the relative amount of time they spent performing the tasks. The job inventory data provided the basis for analyzing the job structure of the 431X1 and 431X2 specialties and making comparisons between DAFSC groups, CONUS-overseas groups, and job satisfaction indicators. A summary of the analyses of the data was presented in the Occupational Survey Report (OSR) for the Tactical and Airlift/Bombardment Aircraft Maintenance Specialties, AFPT 90-431-371, dated June 1981. In addition to using job inventory data for the OSR, percent members performing data for first-enlistment 431X1 specialty groups are also presented in this report along with recently collected task factor ratings.

Task Factor Administration

To enhance the training manager's ability to make objective decisions, task difficulty and training emphasis booklets were administered to selected 43171 personnel to help identify current training requirements. Although the task listings in the job inventory and task factor booklets were identical, task difficulty and training emphasis booklets were processed separately because of the different type of information gathered. A brief explanation of these rating factors and their application is provided below.

Task Difficulty. Task difficulty data were independently collected from 87 experienced Tactical Aircraft Maintenance Technicians during the same period job inventory booklets were administered. Each senior NCO who completed a task difficulty booklet was asked to rate all familiar tasks on a nine-point scale from extremely low (one) to extremely high (nine) as to the relative difficulty of that task. Difficulty is defined as length of time required for an average member to learn to perform that task. The interrater reliability (as assessed through components of variance of standard group means) for these 87 raters was .96, which indicates very high agreement

among the raters. The ratings were adjusted so that tasks of average difficulty have ratings of 5.00 and a standard deviation of 1.00. The result of the data obtained from the 431X1 raters is a rank ordered listing of tasks based on the relative degree of difficulty assigned each task in the inventory.

Training Emphasis. Training emphasis booklets were administered to DAFSC 43171 personnel from April through October 1981. The 415 senior NCOs who completed the training emphasis booklets were asked to rate only tasks applicable to the aircraft system the respondent currently maintains. Ratings range from zero (no training emphasis required) to nine (extremely high training emphasis required). Training emphasis ratings provide an indication of how much emphasis should be placed on structured training for first-term 431X1 personnel. Structured training is defined as training provided at resident technical schools, field training detachments (FTD), Mobile Training Teams (MTT), formal on-the-job training (OJT), or any other organized training method.

As indicated by the survey administration dates, distribution of training emphasis booklets was delayed to identify which 7-skill level incumbents are best qualified to provide ratings on a specific aircraft system. Data presented in the Tactical and Airlift/Bombardment OSR (June 1981) indicated 43171 technicians perform a variety of diverse jobs, some of which do not require actual experience on a specific aircraft. This finding, coupled with the objective to provide data for Phase II FTD training programs, led to a strategy of administering survey booklets through maintenance supervisors in Aircraft Generation or Organizational Maintenance Squadrons. This procedure allowed the maintenance supervisor to identify qualified respondents who had experience on a specified aircraft and who also supervised personnel working on that aircraft. Special emphasis was placed on having flight chiefs and senior crew chiefs complete the booklets.

Since individuals rated tasks only for the aircraft they maintained, separate reliability coefficients were computed to determine the amount of agreement among respondents for each aircraft system, as well as for the combined 431X1 sample. Training emphasis ratings were obtained from DAFSC 43171 personnel who worked on the following aircraft systems: A-7, A-10, F-4, F-15, F-16, F-106, F/FB-111, O-2, OV-10, SR-71, T-33, T-37, T-38, and U-2. With the exception of the A-7 respondents, high agreement was found among the raters for each aircraft group. Because of the high agreement, training emphasis ratings should provide objective data which can be used with other factors to assess FTD training requirements. The reliability coefficient of the combination of raters for all aircraft systems also indicates a high level of agreement on many tasks and should help identify general tasks which may be trained in a common 431X1 school.

Like task difficulty, training emphasis ratings provide objective data which should be used along with percent members performing data when making training decisions. Percent members performing data provide information on who is performing each task. Task difficulty ratings give information as to which tasks may require more time to train, and training emphasis indicates what tasks should be considered for structured training. Using these factors in conjunction with appropriate training documents and directives, managers can tailor training programs to reflect the needs of the user by more effectively determining when, where, and how to train first-enlistment 431X1 airmen.

Survey Sample

As indicated above, the administration of the AFS 431X1/431X2 Job Inventory, task difficulty booklet, and training emphasis booklet involved three separate survey samples. Eighty-seven 43171 technicians provided difficulty ratings for the task which first-term Tactical Aircraft Maintenance personnel perform. Table 1 presents the sample distribution for first-enlistment aircraft groups as well as the number of training emphasis raters for each aircraft system. Because A-7 aircraft are assigned to Air Force Reserve units, A-7 task data are not presented in this report.

TABLE 1
SAMPLE DISTRIBUTION OF AIRCRAFT SURVEYED

<u>AIRCRAFT</u>	<u>FIRST- ENLISTMENT PERSONNEL*</u>	<u>TRAINING EMPHASIS RATERS</u>
A-7	25	4
A-10	63	37
F-4	402	48
F-15	97	44
F-16	54	37
F-106	39	36
F-111	144	21
FB-111	45	15
O-2	17	15
OV-10	18	29
SR-71	34	11
T-33	28	22
T-37	46	39
T-38	109	45
U-2	29	9

*NOTE: FIRST-ENLISTMENT AIRCRAFT GROUPS DO NOT INCLUDE PERSONNEL WHOSE PRIMARY WORK SECTION INVOLVES PERFORMING NON-POWERED AEROSPACE GROUND EQUIPMENT (AGE), -21 SUPPORT EQUIPMENT, TOOL ROOM, BENCH STOCK, TRANSIENT MAINTENANCE, OR ADMINISTRATIVE FUNCTIONS. BY EXCLUDING PERSONNEL IN THE ABOVE WORK AREAS, THESE RESPONDENTS PROVIDE MORE RELEVANT TASK INFORMATION FOR EACH AIRCRAFT TYPE.

TRAINING ANALYSIS

A primary concern for managers of any specialty involves developing the most efficient and cost-effective training programs where career ladder incumbents learn to perform the jobs required of them. Information provided in this report which can be used to assess training requirements includes percent of 431X1 first-enlistment respondents performing tasks, training emphasis data, and task difficulty ratings. Although this information is useful in evaluating training needs for various 431X1 skill level and experience (TAFMS) groups, this report places emphasis on first-term Tactical Aircraft Maintenance personnel to provide data for assessing Phase I and Phase II Able Chief Training Programs.

Analysis of First-Enlistment Personnel

An analysis of jobs and tasks which first-enlistment (1-48 months TAFMS) respondents perform was made to determine the basic functions of apprentice 431X1 personnel. First-enlistment information was used instead of 3-skill level data because the 43131 sample is small due to the short time required to upgrade to the 5-skill level. Since tasks which AFSC 43131 airmen perform are not completely representative of the diverse jobs 3-skill level personnel may perform following Able Chief training, 431X1 first-enlistment groups provide more appropriate target groups to use in identifying training needs.

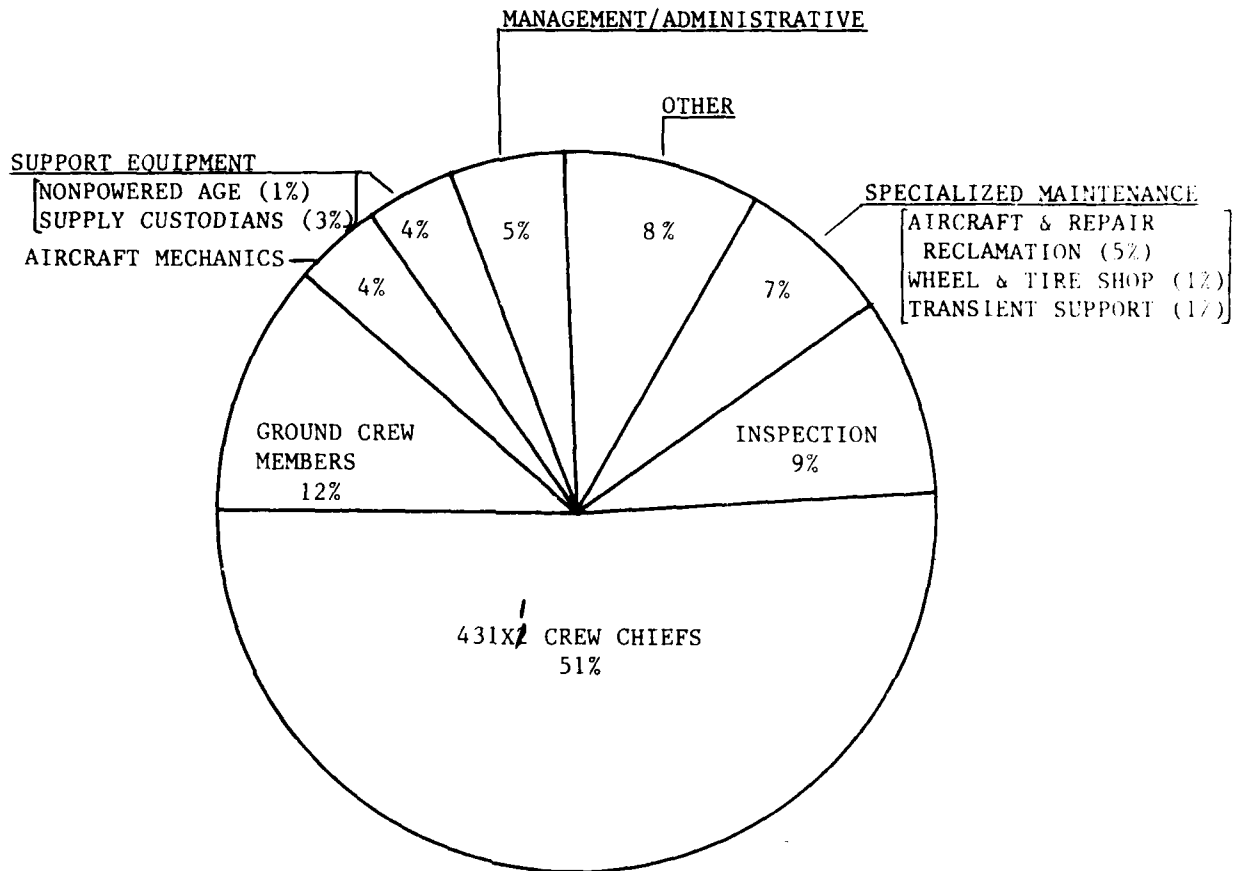
Table 2 presents some of the more common first-term 431X1 tasks. These typical flightline functions involve ground handling of aircraft, servicing and inspecting aircraft systems and equipment, operating aerospace ground equipment (AGE), and annotating maintenance forms. A high number of tasks (63) are performed by 50 percent or more of the first-enlistment respondents. Because tasks such as those listed in Table 2 are also representative of some of the larger job groups identified within the Occupational survey Report (OSR) for the Tactical and Airlift/Bombardment Aircraft Maintenance Specialties (June 1981), they are excellent examples of tasks which should be considered for general maintenance training.

Figure 1 displays the distribution of first-term respondents across functional job groups identified in the Tactical and Airlift/Bombardment Aircraft Maintenance OSR. Although most of the respondents perform maintenance related activities (i.e., Aircraft Mechanic, Ground Crew Member, 431X1 Crew Chief, and Specialized Maintenance job groups), approximately nine percent of the incumbents are assigned either to Support Equipment or Administrative jobs which do not involve aircraft maintenance or servicing functions. The fact that 431X1 incumbents can be assigned to any of these types of functions indicates the complex training problem that confronts managers today.

Although most first-term jobs involve maintenance of a specific aircraft, individuals working in the following areas deserve attention because of the special set of tasks they perform: Aircraft Repair and Reclamation, Supply Custodians, and Inspection. The following listings contain tasks which are characteristic of these groups.

FIGURE 1

DISTRIBUTION OF AFS 431X1 FIRST-ENLISTMENT PERSONNEL ACROSS
FUNCTIONAL JOB GROUPS



Aircraft Repair and Reclamation

- install or remove flight control rig pins
- remove or install flaps
- adjust flight control push-pull rods
- measure flight control surface travel using protractors, templates, or rigging devices
- remove or install primary flight control surfaces
- remove or install windows or windshields
- isolate flap system malfunctions
- isolate flight control trim system malfunctions

Supply Custodians

- inventory supplies, equipment, or tools
- maintain tool cribs
- maintain bench stock parts or equipment levels
- order parts by voice communications

Inspection

- remove or install aircraft hardware, such as screws or fasteners
- jack aircraft using tripod jacks
- inspect access panels
- walk wings or tails during towing operations
- inspect airframe structures
- inspect aircraft for corrosion
- inspect tires
- inspect landing gear up or down lock mechanisms
- inspect canopy systems
- inspect landing gear structural components

Since the Aircraft Repair and Reclamation and Supply Custodian job groups represent small portions of the first-enlistment population, the unique functions they perform probably can be trained more effectively through special FTD or OJT programs. In contrast with the previous groups, many of the tasks personnel working in inspection sections perform are similar to some flightline maintenance functions. Inspection jobs, however, require additional follow-on FTD or OJT training for incumbents to learn particular inspection concepts and procedures.

To assist training personnel in making training decisions, the next section discusses first-term airmen with respect to the type of aircraft they maintain and highlights some differences between 431X1 aircraft systems.

TABLE 2

COMMON TASKS PERFORMED BY FIRST-ENLISTMENT 431X1 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
I450 WALK WINGS OR TAIL DURING TOWING OPERATIONS	81
J485 INSPECT TIRES	79
I403 GROUND AIRCRAFT	77
H234 INSPECT ACCESS PANELS	77
I422 OPERATE MAINTENANCE STANDS	75
H303 REMOVE OR INSTALL ACCESS PANELS	74
I439 SERVICE HYDRAULIC SYSTEMS	74
I406 JACK AIRCRAFT USING TRIPOD JACKS	74
I447 SERVICE TIRES	74
I438 SERVICE ENGINE OIL	74
I425 OPERATE PORTABLE LIGHTING EQUIPMENT	74
H310 REMOVE OR INSTALL AIRCRAFT HARDWARE, SUCH AS SCREWS OR FASTENERS	73
I410 MARSHAL AIRCRAFT	73
I449 TAKE ENGINE OIL SAMPLES	71
I431 POSITION AGE TO AIRCRAFT	71
H281 LUBRICATE AIRCRAFT COMPONENTS	70
I402 FUEL AIRCRAFT USING SINGLEPOINT METHODS	69
I405 JACK AIRCRAFT USING AXLE JACKS	69
J481 INSPECT LANDING GEAR STRUTS	68
N770 REMOVE OR INSTALL LIGHT BULBS	67
E135 ANNOTATE AFTO FORM 781K, AEROSPACE VEHICLE INSPECTION, ENGINE DATA, CALENDAR ITEM INSPECTION AND DELAY DISCREPANCY DOCUMENT	66
H239 INSPECT AIRFRAME STRUCTURES	65
H257 INSPECT SEATS, SEATBELTS, INERTIAL REELS, OR SHOULDER HARNESSES	65
I428 PERFORM AIRCRAFT LAUNCH CHECKLIST PROCEDURES	65
I391 DEFUEL AIRCRAFT USING SINGLEPOINT METHOD	65
H233 INSPECT ACCESS DOORS OR HATCHES	64
H238 INSPECT AIRCRAFT FOR CORROSION	64
I385 BLEED HYDRAULIC SYSTEMS	64
I448 STAND FIREGUARD	63
E133 ANNOTATE AEROSPACE VEHICLE FLIGHT STATUS AND MAINTENANCE DOCUMENT (AFTO FORM 781H)	61
I429 PERFORM AIRCRAFT RECOVERY CHECKLIST PROCEDURES	61
N768 REMOVE OR INSTALL BATTERIES	61
E150 ANNOTATE MAINTENANCE DATA COLLECTION RECORD (AFTO FORM 349)	60
J486 INSPECT WHEEL ASSEMBLIES	59
E151 ANNOTATE MAINTENANCE DISCREPANCY AND WORK DOCUMENT (AFTO FORM 781A)	56

Analysis of First-Enlistment Aircraft Groups

In addition to the analysis of task performance across all first-enlistment 431X1 personnel, a comparison was also made to identify tasks which distinguish aircraft groups. While the common 431X1 tasks presented in the previous section highlight some functions for Phase I training, tasks such as those discussed in this section are aircraft-related and should be considered primarily for the Phase II Able Chief courses or follow-on FTD or OJT training.

Tables 3 and 4 list some of the tasks that differentiate 431X1 first-enlistment personnel who are responsible for inspecting, servicing, and maintaining the following types of aircraft: A-10, F/RF-4, F-15, F-16, F-106, F/FB-111, O-2, OV-10, SR-71, U-2, T-33, T-37, and T-38. These first-term aircraft maintenance groups include respondents who perform flightline maintenance, inspection, and aircraft repair and reclamation functions, but do not contain personnel whose primary job involves performing non-powered AGE, bench stock, tool room, -21 support equipment, administrative, or transient maintenance functions. Therefore, the percent members performing data presented in the tables provide more relevant task information for individuals working on each aircraft type.

As indicated in Tables 3 and 4, the group with the most unique tasks maintain F/FB-111 aircraft. Typical F/FB-111 tasks include servicing tail bumpers, performing stab droop checks, inspecting bomb bay doors, and inspecting sweep wing systems or bilge pumps. In addition to the aircraft-specific functions which distinguish F/FB-111 personnel, some differences in utilization patterns were also noted when comparing F-111 and FB-111 respondents (see Table 5 for a list of differentiating tasks). Higher percentages of F-111 respondents indicated they perform wheel and brake functions and are involved in towing and jacking operations. In contrast, FB-111 maintenance personnel were more likely to remove or install wing tips or engine cowlings, inspect inflight refueling receptacles, and operationally check bomb bay doors. Since members of both groups perform these differentiating tasks, percent performing data appear to reflect variations in command utilization policy rather than specific aircraft differences.

For most aircraft groups, the differentiating tasks are common to more than one aircraft. For example, some aircraft groups (i.e., F/RF-4, F-106, SR-71, and U-2) perform functions involving drag chute systems. Examples of other tasks which are typical of select aircraft groups include: fold or unfold wings (F-4 and U-2); inspect cartridge type starter breech caps (F-4 and F/FB-111); inspect ram air turbine doors (F-4 and F-106); service APUs, EPUs, or GTCs (A-10 and F-16); and remove or install seats other than ejection seats (F/FB-111 and O-2). Other differences depend on whether aircraft have inflight refueling systems and gaseous or liquid oxygen systems.

In addition to equipment and structural differences, Tables 3 and 4 also indicate some aircraft groups have a much higher percentage of respondents performing a task that is also applicable to several other aircraft groups. For example, personnel who maintain SR-71 aircraft are more likely to cool hot brakes, while higher percentages of the T-38 respondents adjust brake system mechanical components. Tasks such as these may reflect a particular need or problem area which results in a different utilization pattern for personnel on a particular aircraft.

Because of the variations in equipment and systems, specific aircraft training programs are necessary to provide apprentice maintenance personnel with relevant training. The tasks in Tables 3 and 4 can help identify some of the more apparent differences. However, subject-matter experts may need to further analyze tasks such as these by using training emphasis and task difficulty data to determine the most appropriate training program.

TABLE 3

EXAMPLES OF TASKS WHICH DIFFERENTIATE FIRST-ENLISTMENT AIRCRAFT GROUPS
(PERCENT MEMBERS PERFORMING)

TASKS	A-10	RF/F-4	F-15	F-16	F-106	F/FB-111	O-2	OV-10	SR-71	U-2	T-33	T-37	T-38
1399 FOLD OR UNFOLD WINGS	-	90	-	-	-	-	-	-	12	52	-	-	-
H298 OPERATIONALLY CHECK WING FOLD SYSTEMS	-	70	-	-	-	-	-	-	-	17	-	-	-
H330 REMOVE OR INSTALL DRAG CHUTE DOORS	-	67	-	-	37	-	-	-	50	24	-	-	-
R871 INSPECT CARTRIDGE TYPE STARTER BREACH CAPS	-	50	-	-	-	50	-	-	-	-	-	-	-
1423 OPERATE PORTABLE AIR-CONDITIONING EQUIPMENT	-	20	61	91	19	21	-	11	56	28	-	-	-
1384 BLEED EMERGENCY POWER UNIT NITROGEN CHARGES	25	15	11	81	-	26	-	-	-	24	-	-	-
X1029 INSPECT INFLIGHT REFUELING DOORS	40	56	48	67	63	46	-	-	41	-	-	-	-
K604 SERVICE APUs, EPUs, OR GTCs	48	-	-	52	-	-	-	-	0	-	-	-	-
H254 INSPECT RAM AIR TURBINE (RAT) DOORS	-	39	-	-	91	-	-	-	0	-	11	-	-
1433 REMOVE OR INSTALL DRAG CHUTES	-	82	-	-	87	-	-	11	59	69	-	-	-
H295 OPERATIONALLY CHECK RAT DOORS	-	37	-	-	80	-	-	-	0	-	-	-	-
R927 REMOVE OR INSTALL STARTERS	13	-	-	-	70	-	-	-	-	-	18	-	-
H317 REMOVE OR INSTALL CANOPIES	16	13	-	-	59	13	-	56	35	31	57	-	-
R867 INSPECT AFTERBURNER EYELID SYSTEMS	-	32	25	17	56	23	-	-	18	-	-	22	-
R921 REMOVE OR INSTALL ENGINE OIL COOLERS	13	-	-	-	42	-	-	-	-	-	-	-	-
M739 SERVICE TAIL RUMPERS	-	-	-	-	-	75	-	-	-	-	-	-	-
1430 PERFORM STAB DROOP CHECKS	-	15	-	-	-	62	-	-	-	-	-	-	-
H309 REMOVE OR INSTALL AIR DEFLECTOR DOORS	-	-	-	-	-	51	-	-	-	-	-	-	-
M731 REMOVE OR INSTALL PNEUMATIC SYSTEM CHEMICAL DRYERS	-	21	-	-	-	50	-	-	-	-	-	-	-
H242 INSPECT BOMB BAY DOORS	-	-	-	-	15	49	-	11	-	-	-	-	-
L636 INSPECT WING SWEEP SYSTEMS	-	-	-	-	-	45	-	-	-	-	-	-	-
H241 INSPECT BILGE PUMPS	-	-	-	-	-	40	-	-	-	-	-	-	-

- TEN PERCENT OR LESS PERFORMING

TABLE 4

EXAMPLES OF TASKS WHICH DIFFERENTIATE FIRST-ENLISTMENT AIRCRAFT GROUPS (CONTINUED)
(PERCENT MEMBERS PERFORMING)

TASKS	A-10	RF/F-4	F-15	F-16	F-106	F/FB-111	O-2	OV-10	SR-71	U-2	T-33	T-37	T-38
S955 OPERATIONALLY CHECK COWL FLAPS	-	-	-	-	-	-	88	-	-	-	-	-	-
H352 REMOVE OR INSTALL SEATBELTS OR SHOULDER HARNESSSES	-	-	-	-	-	62	82	11	-	-	11	-	-
H353 REMOVE OR INSTALL SEATS OTHER THAN EJECTION SEATS	-	-	-	-	-	56	82	17	-	-	-	-	-
L679 REMOVE OR INSTALL GUST LOCKS	-	-	-	-	-	-	82	61	-	52	32	50	-
L671 REMOVE OR INSTALL FLIGHT CONTROL CABLES	11	-	-	-	-	-	71	-	35	31	36	-	-
K583 OPERATIONALLY CHECK WINDSHIELD WIPER SYSTEMS	-	-	-	-	-	-	-	56	-	-	-	-	-
H312 REMOVE OR INSTALL ARMOR PLATING	13	-	-	-	-	-	18	50	-	-	-	-	-
H255 INSPECT RELIEF FACILITIES	-	-	-	33	-	-	-	50	-	31	43	-	-
H246 INSPECT DRAG CHUTE SYSTEMS	-	79	-	-	85	-	-	-	94	90	-	-	-
H290 OPERATIONALLY CHECK DRAG CHUTE RELEASE SYSTEMS	-	74	-	-	78	-	-	-	85	72	-	-	-
I388 COOL HOT BRAKES	13	18	10	19	31	16	12	11	59	-	-	-	14
H313 REMOVE OR INSTALL BALLASTS	33	-	-	-	-	24	-	22	35	69	21	-	-
R928 REMOVE OR INSTALL TAILPIPER	13	-	-	-	-	-	-	61	-	24	75	15	12
H372 REMOVE OR INSTALL WING LEADING EDGES	32	30	-	20	67	20	18	11	29	-	71	-	47
I442 SERVICE OXYGEN SYSTEMS WITH LOW PRESSURE GASEOUS OXYGEN	14	-	-	-	-	31	-	17	-	14	68	65	-
K584 PURGE GASEOUS OXYGEN SYSTEMS	-	-	-	-	-	22	-	39	-	41	61	85	-
N761 OPERATIONALLY CHECK INVERTERS	38	-	-	-	-	-	12	44	-	17	68	70	-
P826 OPERATIONALLY CHECK GASEOUS OXYGEN SERVICING CARTS	-	-	-	-	-	25	-	22	-	21	39	63	-
J452 ADJUST BRAKE SYSTEM MECHANICAL COMPONENTS	13	21	-	-	35	18	29	44	-	-	39	15	83

- TEN PERCENT OR LESS PERFORMING

TABLE 5

TASKS WHICH DISTINGUISH FIRST-TERM F-111 AND FB-111 AIRCRAFT MAINTENANCE PERSONNEL

TASKS	PERCENT PERFORMING		
	F-111 (N=144)	FB-111 (N=45)	DIFFERENCE
J531 REMOVE OR INSTALL WHEEL ASSEMBLIES	65	13	52
J508 REMOVE OR INSTALL BRAKE ASSEMBLIES	61	11	50
J461 BLEED BRAKE SYSTEMS	68	29	39
I395 DIRECT TOWING OPERATIONS	64	27	37
I426 OPERATE TOW VEHICLES DURING AIRCRAFT TOWING OPERATIONS	48	13	35
I394 DIRECT JACKING OPERATIONS	65	33	32
K576 OPERATIONALLY CHECK FIRE WARNING OR OVERHEAT DETECTION SYSTEMS	33	9	24
H373 REMOVE OR INSTALL WING TIPS	19	53	-34
R917 REMOVE OR INSTALL ENGINE COWLING LATCHES	11	40	-29
R875 INSPECT ENGINE COWLING LATCHES	32	56	-24
X1032 INSPECT INFLIGHT REFUELING RECEPTACLES	32	56	-24
R853 ADJUST ENGINE COWLING LATCHES	8	31	-23
H285 OPERATIONALLY CHECK BOMB BAY DOORS	33	56	-23
O789 OPERATIONALLY CHECK EXTERNAL FUEL TANKS	27	47	-20

TASK FACTOR APPLICATION

As discussed in the INTRODUCTION, task factor booklets were sent to 43171 technicians to obtain training emphasis and difficulty ratings for tasks in the 431X1/X2 inventory. These rating factors were collected for training managers to use in conjunction with percent performing data to help evaluate career ladder documents and ensure training programs are tailored to meet the job requirements of career ladder incumbents.

Training Emphasis

First-term training emphasis ratings were obtained from 415 Tactical Aircraft Maintenance technicians representing a cross-section of 431X1 aircraft systems (i.e., A-10, F/RF-4, F-15, F-16, F-106, F/FB-111, O-2, OV-10, SR-71 U-2, T-33, T-37, and T-38). As indicated previously, the training emphasis sample is comprised primarily of individuals assigned to either Aircraft Generation Squadrons or Organizational Maintenance Squadrons. Raters, therefore, normally place greater emphasis on training tasks applicable to flightline or inspection functions than to repair and reclamation tasks or other shop-related activities. Since respondents provided training emphasis ratings for tasks relevant to the aircraft they maintained, data are valuable in assessing both common training requirements and aircraft-specific needs.

Table 6 presents those tasks rated highest in training emphasis by 43171 respondents. As expected, tasks in this list are typical of many common flightline maintenance functions. Four of the five tasks respondents rated highest in training emphasis involved annotating general maintenance forms, such as AFTO Forms 781A/H/K and 349. Raters also placed high emphasis on training common maintenance functions involving ground movement of aircraft, servicing and inspecting aircraft systems and components, and operating aerospace ground equipment (AGE). Since these tasks have high training emphasis and percent members performing data, they provide good examples of functions which are appropriate for the Phase I Course at Sheppard Technical Training Center.

In contrast with the common functions addressed above, tasks in Table 7 were rated below average (mean=1.54) in training emphasis by the composite group of respondents and were performed by fewer first-term incumbents. In many Air Force specialties, training managers designate tasks such as those in Table 7 as OJT items. However, a more detailed analysis of these tasks revealed that some are aircraft or job-specific functions which may be trained more effectively through FTD courses. For example, data in the ANALYSIS OF FIRST-ENLISTMENT AIRCRAFT GROUPS section showed that many F-4 maintenance personnel fold or unfold wings; that F-106 incumbents inspect ram air turbine (RAT) doors; and that many F/FB-111 respondents service tail bumpers. Other tasks, such as isolate throttle system malfunctions, measure force feel of sticks or columns, and adjust flight control artificial feel are normally aircraft repair and reclamation functions.

By reviewing specific aircraft percent members performing and training emphasis data, managers can quickly identify training needs for each aircraft. For instance, Table 3 shows 81 percent of the first-term F-16 maintenance respondents bleed emergency power unit nitrogen charges, while 91 percent

of the F-106 personnel surveyed inspect RAT doors. Table 8 reveals that F-16 and F-106 subject matter experts rated tasks high in training emphasis. The training emphasis data in Table 8 provide additional examples that help identify tasks which may be trained more appropriately during Phase II Able Chief or follow-on training. Before making a final training decision, however, managers should also consider the difficulty rating of each task to determine the most appropriate training method.

Task Difficulty

Tables 6 and 7 also contain difficulty ratings for tasks discussed in the previous section. As seen in Table 6, all of the tasks rated highest in training emphasis are average (mean=5.0) or below average in task difficulty. These tasks are some of the more typical functions which maintenance personnel perform, and raters apparently perceive them as requiring less time to learn than many other maintenance functions. This is especially true with those involving management, supervision, and repair and reclamation activities. In fact, data indicate that some tasks such as grounding aircraft, walking wings or tail during towing operations, and standing fireguard should require little time for individuals to learn. Although tasks like these could be trained effectively through OJT, the large number of personnel performing and the broad job scope which maintenance incumbents must learn could create major training problems for flightline supervisors. To prevent this kind of training problem, resident school instructors may be able to provide knowledge or team participation training on tasks with low difficulty to help minimize the training required on the individuals' subsequent assignments.

In contrast with many general maintenance functions, some of the tasks in Table 7 rated low in training emphasis have very high difficulty ratings. Most of these tasks involve repair and reclamation functions, such as isolate throttle system or starter system malfunctions and adjust flight control artificial feel. Since high difficulty ratings are typical of many aircraft repair and reclamation tasks, the job itself may consume a lot of training time. Because aircraft repair and reclamation personnel need to learn both systems knowledge and task performances, field training detachments (FTD) could provide much of the required training if the student flow justifies such training.

TABLE 6

TASKS RATED HIGHEST IN TRAINING EMPHASIS BY 43171 TECHNICIANS

TASK		AFSC 431X1 TRAINING EMPHASIS	TASK DIFFICULTY	AFSC 431X1 FIRST-TERM PERCENT PERFORMING
E135	ANNOTATE AFTO FORM 781K, AEROSPACE VEHICLE INSPECTION, ENGINE DATA, CALENDAR ITEM INSPECTION, AND DELAY DISCREPANCY DOCUMENT	7.24	3.93	66
E150	ANNOTATE MAINTENANCE DATA COLLECTION RECORD (AFTO FORM 349)	7.23	4.25	60
E133	ANNOTATE AEROSPACE VEHICLE FLIGHT STATUS AND MAINTENANCE DOCUMENT (AFTO FORM 781H)	7.17	3.92	61
I410	MARSHAL AIRCRAFT	7.15	3.03	73
E151	ANNOTATE MAINTENANCE DISCREPANCY AND WORK DOCUMENT (AFTO FORM 781A)	7.14	4.03	56
I438	SERVICE ENGINE OIL	7.03	3.34	74
E447	SERVICE TIRES	7.02	3.60	74
I439	SERVICE HYDRAULIC SYSTEMS	7.01	3.68	74
I403	GROUND AIRCRAFT	6.94	1.88	77
I485	INSPECT TIRES	6.89	3.79	80
I405	JACK AIRCRAFT USING AXLE JACKS	6.88	3.43	69
I449	TAKE ENGINE OIL SAMPLES	6.59	3.16	71
H234	INSPECT ACCESS PANELS	6.58	3.81	77
I450	WALK WINGS OR TAIL DURING TOWING OPERATIONS	6.57	2.08	82
H239	INSPECT AIRFRAME STRUCTURES	6.40	5.05	66
H257	INSPECT SEATS, SEAT BELTS, INERTIAL REELS, OR SHOULDER HARNESES	6.34	4.62	65
I426	OPERATE TOW VEHICLES DURING AIRCRAFT TOWING OPERATIONS	6.28	4.45	41
I425	OPERATE PORTABLE LIGHTING EQUIPMENT	6.25	2.91	74
H310	REMOVE OR INSTALL AIRCRAFT HARDWARE, SUCH AS SCREWS OR FASTENERS	6.25	2.83	73
I394	DIRECT JACKING OPERATIONS	6.23	4.90	58
I422	OPERATE MAINTENANCE STANDS	6.21	2.55	75
I448	STAND FIREGUARD	6.20	1.91	63
I393	DIRECT FUELING OR DEFUELING OPERATIONS	6.19	4.86	61
J486	INSPECT WHEEL ASSEMBLIES	6.14	3.95	59

TABLE 7

REPRESENTATIVE 431X1 TASKS RATED BELOW AVERAGE IN TRAINING EMPHASIS

TASKS	AFSC 431X1 TRAINING EMPHASIS*	TASK DIFFICULTY	AFSC 431X1 FIRST-TERM PERCENT PERFORMING
R899 ISOLATE THROTTLE SYSTEM MALFUNCTIONS	1.52	6.59	4
H380 STRAIGHTEN OR REMOVE SMALL DENTS FROM AIRCRAFT PANELS	1.50	4.43	16
R875 INSPECT ENGINE COWLING LATCHES	1.48	3.81	12
H330 REMOVE OR INSTALL DRAG CHUTE DOORS	1.41	5.01	21
Q842 INSPECT -21 SUPPORT EQUIPMENT	1.36	3.53	3
H254 INSPECT RAM AIR TURBINE (RAT) DOORS	1.35	4.15	17
P836 SERVICE GASEOUS OXYGEN SERVICING CARTS	1.34	3.60	4
L645 MEASURE FORCE FEEL OF STICKS OR COLUMNS	1.30	5.58	6
I399 FOLD OR UNFOLD WINGS	1.28	3.59	28
K604 SERVICE APUs, EPUs, OR GTCs	1.24	4.33	8
P831 PERFORM CORROSION CONTROL ON NON-POWERED AGE	1.22	3.16	4
H383 UPLOAD OR DOWNLOAD PODS	1.13	5.00	9
R898 ISOLATE STARTER SYSTEM MALFUNCTIONS	1.08	6.46	3
I408 LIFT AIRCRAFT BY CRANES	1.00	7.26	4
L613 ADJUST FLIGHT CONTROL ARTIFICIAL FEEL	.94	6.60	5
O787 ISOLATE FUEL TANK FEED SYSTEM MALFUNCTIONS	.85	6.31	4
M737 SERVICE TAIL BUMPERS	.78	3.93	10
H332 REMOVE OR INSTALL EJECTION SEATS	.76	7.16	5
Q851 STOW -21 SUPPORT EQUIPMENT	.68	3.04	2
R888 INSPECT PROPELLERS	.58	4.32	2
N773 SERVICE BATTERIES	.57	3.31	4
N764 PERFORM BATTERY SPECIFIC GRAVITY CHECKS	.41	4.11	2
H252 INSPECT PHOTOFLASH DOORS	.40	4.45	4
H382 UPLOAD OR DOWNLOAD MUNITIONS	.38	6.18	2
H315 REMOVE OR INSTALL BOMB BAY DOORS	.34	5.51	3
S942 INSPECT COWL FLAPS	.25	4.31	2
V990 INSPECT TOW TARGET BRIDLE ASSEMBLIES	.14	4.04	1

*AVERAGE 431X1 TRAINING EMPHASIS RATING = 1.54

TABLE 8

EXAMPLES OF AIRCRAFT-SPECIFIC TASKS RATED HIGH IN TRAINING EMPHASIS
(AIRCRAFT TRAINING EMPHASIS RATINGS)

TASKS	A-10	RF/F-4	F-15	F-16	F-106	F/B-111	O-2	OV-10	SR-71	U-2	T-33	T-37	T-38
J399 FOLD OR UNFOLD WINGS	-	7.3	-	-	-	-	-	-	-	6.2	-	-	-
R871 INSPECT CARTRIDGE TYPE STARTER BREECH CAPS	-	6.0	-	-	3.4	5.8	-	-	-	-	-	-	-
I384 BLEED EMERGENCY POWER UNIT NITROGEN CHARGES	-	-	1.6	6.4	-	-	-	-	1.6	1.8	-	-	-
X1029 INSPECT INFLIGHT REFUELING DOORS	2.2	4.4	4.0	4.1	4.9	4.4	-	-	7.1	-	-	-	-
K604 SERVICE APUs, EPUs, OR GTCs	4.3	-	-	5.3	-	-	-	-	-	-	-	-	-
H254 INSPECT RAM AIR TURBINE (RAT) DOORS	-	4.9	-	-	5.9	-	-	-	-	-	-	-	-
R927 REMOVE OR INSTALL STARTERS	-	-	-	-	5.2	-	3.5	1.6	-	-	3.5	-	-
M739 SERVICE TAIL BUMPERS	-	-	-	-	-	7.0	-	-	-	-	-	-	-
I430 PERFORM STAB DROOP CHECKS	-	-	-	-	-	6.6	-	-	-	-	-	-	-
L636 INSPECT WING SWEEP SYSTEMS	-	-	-	-	-	6.0	-	-	-	-	-	-	-
S955 OPERATIONALLY CHECK COWL FLAPS	-	-	-	-	-	-	5.9	-	-	-	-	-	-
H353 REMOVE OR INSTALL SEATS OTHER THAN EJECTION SEATS	-	-	-	-	-	6.6	6.1	-	-	-	-	-	-
K583 OPERATIONALLY CHECK WINDSHIELD WIPER SYSTEMS	-	-	-	-	-	-	-	3.8	-	-	-	-	-
H312 REMOVE OR INSTALL ARMOR PLATING	-	-	-	-	-	-	-	3.8	-	-	-	-	-
H246 INSPECT DRAG CHUTE SYSTEMS	-	7.1	-	-	6.0	-	-	-	7.3	4.4	-	-	-
I388 COOL HOT BRAKES	3.7	4.0	3.6	3.9	3.9	4.2	2.2	3.3	7.2	-	3.9	3.1	3.1
H313 REMOVE OR INSTALL BALLASTS	3.1	-	2.5	-	-	2.6	-	1.5	5.2	6.3	3.3	-	-
R928 REMOVE OR INSTALL TAIL PIPES	-	-	-	-	-	-	2.9	4.4	-	-	6.0	2.8	-
K584 PURGE GASEOUS OXYGEN SYSTEMS	-	-	-	-	-	3.3	-	4.0	-	-	6.5	5.5	-
N761 OPERATIONALLY CHECK INVERTERS	3.8	-	-	-	-	-	-	3.5	1.5	3.1	5.6	4.9	-
J452 ADJUST BRAKE SYSTEM MECHANICAL COMPONENTS	-	2.7	-	1.9	2.7	1.8	3.7	2.9	-	0	4.4	1.8	5.3

ANALYSIS OF TRAINING DOCUMENTS

Since occupational survey data are gathered from career ladder incumbents, managers can use it to determine if the 431X1 Specialty Training Standard (STS) and the 3AQR431X1/X2 Plan of Instruction (POI) are comprehensive and accurate. It is essential that these training documents reflect actual or desired utilization patterns because of their impact on preparing incumbents to perform their jobs.

To facilitate the use of percent members performing and task factor (training emphasis and task difficulty ratings) data, subject-matter experts at STTC matched 431X1 inventory tasks to related STS items and to applicable POI objectives. Computerized matchings, called FACPRINTS (FCP), were then made for the STS and the POI, pairing percent performing and task factor data for each task to the respective STS item(s) or POI objective. Unmatched survey tasks are presented in the "tasks not referenced" section of each STS or POI FACPRINT to help identify possible additional STS or POI requirements. The basic 431X1 Training Extract (Atch 1) provides a combination of STS and POI FACPRINTS containing information for various TAFMS, DAFSC, and aircraft groups which managers can use to assess training needs and determine how to more effectively use training resources.

Specialty Training Standard

An analysis of data associated with tasks matched to STS 431X1 indicates good overall coverage of most functions which Tactical Aircraft Maintenance personnel perform. A review of the unmatched data did reveal, however, that maintenance of non-powered AGE may not be adequately covered in the STS. Although a small percentage of AFS 431X1 maintenance incumbents perform tasks such as maintain maintenance stands, aircraft jacks, or oil servicing carts, the June 1981 OSR for the Aircraft Maintenance specialties clearly identified a distinct Non-powered AGE job group. Because of the unique tasks this group performs, managers may want to place specific emphasis on maintaining non-powered AGE equipment. Other unmatched tasks which do not appear to be addressed in the 431X1 STS involve debriefing aircrews and performing aircraft cold weather procedures.

In addition to using survey data to evaluate what 431X1 functions require training, managers can also review task data to determine when and how to administer training. Table 9 presents examples of tasks matched to 431X1 STS items which currently are being trained to Phase I Able Chief students. Survey data indicate that less than 30 percent of the first job (1-24 month TAFMS) and first enlistment (1-48 months TAFMS) respondents actually perform the related tasks. Most of these items involve performing operational checks of aircraft systems, such as steering, fire extinguisher, pneumatic, and hydraulic systems. Another area currently being trained involves operationally checking drag chute systems--a function which is relevant to specific aircraft (i.e., F-4, F-106, SR-71, and U-2). When evaluating STS items such as those above, managers may find other training programs are more appropriate than the Phase I course.

Training managers can also use specific aircraft first-enlistment percent performing and training emphasis data to assess what types of functions Phase II Able Chief course instructors should train. Survey data matched to each task not only help identify STS items that are applicable to each 431X1 aircraft, but also highlight specific tasks which instructors should train.

Plan of Instruction

The Training Extract also contains a computer printout which matches 431X1 task data to relevant objectives in POI 3AQR431X1/X2. This product presents information on training emphasis and task difficulty ratings, as well as first-job and first-enlistment personnel.

An analysis of task data matched to some POI objectives indicates that 431X1 incumbents are receiving training on some tasks which a relatively small portion of the respondents actually perform. As seen in Table 10, which contains tasks matched to POI objectives, low percentages of first-term 431X1 respondents indicated they operationally check nitrogen servicing carts, fuel boost pumps, portable air-conditioning equipment, and landing gear steering systems. In addition, few 431X1 incumbents reported they perform other tasks such as inspect starters or gaseous oxygen systems, remove or install tail cones or aft sections, fold or unfold wings, and service batteries. Although these tasks are relevant to some 431X1 aircraft and jobs, training managers should review task data to determine if training these types of tasks through FTD or OJT programs might make more effective use of training time and resources.

In contrast with the above functions, some 431X1 tasks not referenced to the POI deserve consideration for possible inclusion in the Phase I course. Tasks listed in Table 11 are rated high in training emphasis and are applicable to many respondents working on 431X1 aircraft. Three tasks in this list involve directing maintenance operations, such as towing, jacking, and fueling or defueling aircraft. Examples of other tasks in Table 10 include operating tow vehicles or aircraft cockpit controls during towing operations, operating hydraulic test stands, adjusting access door or hatch linkage or latching mechanisms, and draining engine oil. When considering these tasks for Phase I training, training managers should consider whether training also benefits AFS 431X2 personnel, since incumbents in the two specialties attend the 3AQR431X1/X2 course at the STTC. Table 12 presents a listing of representative tasks which are typical of one, but not both, AFSCs. Deviations in percent performing and training emphasis data for some differentiating tasks, such as operationally checking canopies or crew entrance doors, are a function of general differences in aircraft systems. Because of the general nature of Phase I training, course developers should emphasize common aircraft maintenance functions to make the curriculum more relevant to as many students as possible.

TABLE 9

EXAMPLES OF STS 431X1 AREAS TO REVIEW FOR EFFECTIVENESS OF PHASE I TRAINING

21

D TSK	TITLES	431X1 TRAINING EMPHASIS*	PERCENT PERFORMING				431X1 TASK DIFFICULTY**
			431X1 FIRST JOB	431X1 FIRST ENLISTMENT	43151	43171	
087	12B(1) PERFORM LANDING GEAR OPERATIONAL CHECK						
J500	OPERATIONALLY CHECK LANDING GEAR INDICATOR SYSTEMS	3.84	22	26	27	20	4.58
J499	OPERATIONALLY CHECK LANDING GEAR EXTENSION OR RETRACTION MECHANISMS	3.52	21	26	28	23	5.21
089	12B(3) PERFORM STEERING SYSTEM OPERATIONAL CHECK						
J503	OPERATIONALLY CHECK LANDING GEAR STEERING SYSTEMS	2.62	10	14	15	13	4.93
113	13B(3) PERFORM FIRE EXTINGUISHING SYSTEM OPERATIONAL CHECK						
K575	OPERATIONALLY CHECK FIRE EXTINGUISHER OR SUPPRESSION SYSTEMS	.73	4	4	4	2	4.78
144	13K(3) INSPECT FIRE EXTINGUISHER SYSTEM						
K554	INSPECT FIRE EXTINGUISHER OR SUPPRESSION SYSTEMS	1.65	15	14	15	11	4.31
145	13K(4) INSPECT AIR-CONDITIONING SYSTEMS						
K546	INSPECT AIR-CONDITIONING SYSTEMS	1.93	7	8	9	12	4.93
163	15B(1) PERFORM HYDRAULIC SYSTEM OPERATIONAL CHECK						
M717	OPERATIONALLY CHECK HYDRAULIC SYSTEM ACTUATORS	2.91	14	19	21	15	5.31
M719	OPERATIONALLY CHECK HYDRAULIC SYSTEM PUMPS	2.14	5	9	11	12	5.44
M720	OPERATIONALLY CHECK HYDRAULIC SYSTEM VALVES	1.62	4	6	7	8	5.32
M718	OPERATIONALLY CHECK HYDRAULIC SYSTEM POWER PACKS	.52	3	3	3	2	5.13
164	15B(2) PERFORM PNEUMATIC SYSTEM OPERATIONAL CHECK						
M721	OPERATIONALLY CHECK PNEUMATIC SYSTEM VALVES	1.05	3	4	5	6	5.23
266	21B PERFORM OPERATIONAL CHECK OF DRAG CHUTE SYSTEM						
H290	OPERATIONALLY CHECK DRAG CHUTE RELEASE SYSTEM	1.68	26	28	28	16	4.41

* MEAN TRAINING EMPHASIS = 1.54

**MEAN TASK DIFFICULTY = 5.00

TABLE 10

TASKS MATCHED TO POI 3AQR431X1/X2 WHICH FEW AFS 431X1 RESPONDENTS PERFORM
(LESS THAN 30 PERCENT PERFORMING)

TASKS	431X1 TRAINING EMPHASIS*	431X1 TASK DIFFICULTY**	PERCENT 431X1 MEMBERS PERFORMING	
			FIRST- JOB	FIRST- ENLISTMENT
P829 OPERATIONALLY CHECK NITROGEN SERVICING CARTS	3.42	3.65	16	17
O790 OPERATIONALLY CHECK FUEL BOOST PUMPS	3.23	4.57	24	26
L653 OPERATIONALLY CHECK PRIMARY FLIGHT CONTROL SYSTEMS	3.06	5.29	19	24
O809 TRANSFER FUEL WITHIN AIRCRAFT	2.99	4.85	23	27
M717 OPERATIONALLY CHECK HYDRAULIC SYSTEM ACTUATORS	2.91	5.31	14	19
I423 OPERATE PORTABLE AIR-CONDITIONING EQUIPMENT	2.89	4.00	18	20
I440 SERVICE OXYGEN SYSTEMS WITH HIGH PRESSURE GASEOUS OXYGEN	2.82	3.94	24	25
M738 SERVICE PNEUMATIC SYSTEM ACCUMULATORS	2.75	4.11	25	25
J503 OPERATIONALLY CHECK LANDING GEAR STEERING SYSTEMS	2.62	4.93	10	14
N772 REMOVE OR INSTALL LIGHT REFLECTORS	2.41	2.31	17	16
N769 REMOVE OR INSTALL FUSES OR CURRENT LIMITERS	2.36	3.77	15	19
R885 INSPECT ENGINE QUICK-DISCONNECT LINES	2.20	4.03	15	16
R890 INSPECT STARTERS	2.15	4.44	7	10
K556 INSPECT GASEOUS OXYGEN SYSTEMS	1.94	4.41	13	14
H307 REMOVE OR INSTALL AFT SECTIONS	1.89	6.07	22	24
H359 REMOVE OR INSTALL TAIL CONES	1.81	4.83	21	24
K561 INSPECT WINDSHIELD DEFOG SYSTEMS	1.71	4.36	9	10
L665 REMOVE OR INSTALL FLIGHT CONTROL ACTUATORS OTHER THAN SWEEP WING ACTUATORS	1.64	6.33	8	8
I399 FOLD OR UNFOLD WINGS	1.28	3.59	26	28
H264 INSPECT WING FOLD SYSTEMS	1.12	4.88	19	22
E169 ANNOTATE SYSTEM/EQUIPMENT STATUS RECORD (AFTO FORM 244)	.85	4.12	3	3
N773 SERVICE BATTERIES	.75	3.31	5	4

* MEAN 431X1 TRAINING EMPHASIS = 1.54

**MEAN 431X1 TASK DIFFICULTY = 5.00

TABLE 11

AFS 431X1 TASKS NOT REFERENCED TO 3AQR431X1/X2 POI OBJECTIVES
(30 PERCENT OR MORE PERFORMING)

TASKS	TRAINING EMPHASIS	TASK DIFFICULTY	PERCENT 431X1 RESPONDENTS PERFORMING	
			FIRST JOB	FIRST ENLISTMENT
I395 DIRECT TOWING OPERATIONS	6.40	4.60	49	57
I426 OPERATE TOW VEHICLES DURING AIRCRAFT TOWING OPERATIONS	6.28	4.45	31	41
I394 DIRECT JACKING OPERATIONS	6.23	4.90	53	58
I448 STAND FIREGUARD	6.20	1.91	61	63
I393 DIRECT FUELING OR DEFUELING OPERATIONS	6.19	4.86	56	61
I413 OPERATE AIRCRAFT COCKPIT CONTROLS DURING TOWING OPERATIONS	5.19	3.82	51	49
I421 OPERATE HYDRAULIC TEST STANDS	5.15	5.23	42	45
J497 OPERATIONALLY CHECK BRAKE SYSTEMS	5.02	4.44	30	33
I411 MOOR AIRCRAFT	4.94	3.21	33	31
O801 REMOVE OR INSTALL EXTERNAL FUEL TANKS	4.50	5.06	40	40
H205 ADJUST ACCESS DOOR OR HATCH LINKAGE OR LATCHING MECHANISMS	4.43	4.68	34	38
I397 DRAIN ENGINE OIL	4.01	3.72	32	33
I434 REMOVE SNOW OR ICE FROM AIRCRAFT MANUALLY	4.01	3.53	33	34
H301 REMOVE OR INSTALL ACCESS DOOR OR HATCH LINKAGE OR LATCHING MECHANISMS COMPONENTS	3.51	4.91	31	33

TABLE 12

AFS 431X1 OR 431X2 TASKS FOR PHASE I TRAINING
(PERCENT MEMBERS PERFORMING)

TASKS	FIRST ENLISTMENT PERSONNEL			TRAINING EMPHASIS	
	431X1	431X2	DIFFERENCE	431X1*	431X2**
+H287 OPERATIONALLY CHECK CANOPIES	57	2	55	5.29	.18
+H243 INSPECT CANOPY SYSTEMS	51	4	47	5.53	.34
I394 DIRECT JACKING OPERATIONS	58	13	45	6.23	2.83
I395 DIRECT TOWING OPERATIONS	57	17	40	6.40	4.08
+J508 REMOVE OR INSTALL BRAKE ASSEMBLIES	55	20	35	6.10	3.00
+J465 INSPECT ARRESTING GEAR SYSTEMS	39	5	34	2.91	.27
+H740 SERVICE TAIL HOOKS	34	1	33	2.29	.08
O801 REMOVE OR INSTALL EXTERNAL FUEL TANKS	40	9	31	4.50	1.25
I421 OPERATE HYDRAULIC TEST STANDS	45	16	29	5.15	2.05
+J496 OPERATIONALLY CHECK ARRESTING GEAR SYSTEMS	31	2	29	2.62	.20
I426 OPERATE TOW VEHICLES DURING AIRCRAFT TOWING OPERATIONS	41	14	27	6.28	3.15
+J532 SERVICE BRAKE SYSTEMS	43	18	25	5.22	3.05
H247 INSPECT EJECTION SYSTEMS	35	10	25	4.77	1.25
H289 OPERATIONALLY CHECK CREW ENTRANCE DOOR SYSTEMS	9	50	-41	.34	5.01
+R875 INSPECT ENGINE COWLING LATCHES	12	51	-39	1.48	5.72
+R918 REMOVE OR INSTALL ENGINE COWLINGS	14	52	-38	1.74	5.56
H260 INSPECT SLIDING WINDOW MECHANISMS	4	40	-36	.18	4.91
R853 ADJUST ENGINE COWLING LATCHES	7	41	-34	.95	5.06
R917 REMOVE OR INSTALL ENGINE COWLING LATCHES	9	43	-34	1.20	5.31
+H245 INSPECT CREW ENTRANCE DOOR SYSTEMS	12	46	-34	.59	5.37
H353 REMOVE OR INSTALL SEATS OTHER THAN EJECTION SEATS	12	44	-32	1.19	4.84
H328 REMOVE OR INSTALL CREW ENTRANCE DOORS	4	35	-31	.35	4.20
+H282 OPERATIONALLY CHECK AFT CARGO DOORS OR RAMPS	4	33	-29	.15	3.25
H251 INSPECT LIFERAFT STOWAGE	4	32	-28	.14	3.55
H255 INSPECT RELIEF FACILITIES	9	36	-27	.72	4.31
K604 SERVICE APUs, EPUs OR GTCs	8	34	-26	1.24	3.89
K554 INSPECT FIRE EXTINGUISHER OR SUPPRESSION SYSTEMS	14	40	-26	1.65	3.84
+TASKS MATCHED TO POI 3AQR431X1/X2					

*MEAN 431X1 TRAINING EMPHASIS = 1.54 (ONE STANDARD DEVIATION ABOVE MEAN = 3.23)

**MEAN 431X2 TRAINING EMPHASIS = 1.72 (ONE STANDARD DEVIATION ABOVE MEAN = 3.38)

DISCUSSION

The aircraft-specific training emphasis ratings reported in this study were collected to help Air Force decision makers address the very complex training needs of the Tactical Aircraft Maintenance career field. These data have been compared with information from the June 1981 Aircraft Maintenance OSR to review the present training programs.

One important area which deserves attention is the Phase I course at Sheppard TTC. Although survey data indicate both AFSC 431X1 and 431X2 first-term personnel perform many common functions, other tasks which are primarily relevant to only one of these AFSCs could also be taught effectively during the initial training period if equipment and facilities were available. Since these tasks are not relevant to both specialties, however, they normally are not appropriate for a combined 431X1 and 431X2 course. Therefore, course development specialists should review survey data to determine if enough differences exist to warrant some type channelized training. If this training is applicable, a possible alternative might be to continue using the current Phase I course curriculum and adding additional instructional time to accomplish the channelized training requirements. Another would be to remove AFSC-specific training from the Phase I course.

A second area of concern is the use of graduates in non-flightline jobs. For example, Able Chief students who are initially assigned to either a support equipment or an aircraft repair and reclamation section do not have opportunity to use their initial training. If managers continue to assign apprentice aircraft maintenance personnel to non-flightline maintenance sections, such as repair and reclamation or inspection, alternate initial training programs may need to be developed. Because of the flexibility maintenance supervisors have in using their personnel, it is also important to ensure follow-on FTD or OJT training programs are tailored specifically to meet job requirements.

Because of the size and complex nature of the 431X1 specialty, a Utilization and Training Conference may be necessary to assess current and projected training needs and programs. Occupational survey data, when matched to the revised 431X1 STS, can provide a common data base for conference participants to use when discussing training and utilization issues. Through this coordination process, managers can develop a fully integrated training system.